

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

1 - 34. (canceled)

35. (currently amended) A method for transferring heat using first and second gas adsorbent materials, the second gas adsorbent material being relatively thermally isolated from but in continuous gas communication with the first gas adsorbent material whereby, in use, gas pressure changes are immediately translated between the first and second gas adsorbent materials, the method comprising the steps of:

(i) heating the first gas adsorbent material so as to desorb a gas adsorbed onto the first gas adsorbent material whereby the gas passes to and is adsorbed onto the second gas adsorbent material; and

(ii) cooling the first gas adsorbent material so that the gas is desorbed from the second gas adsorbent material and passes therefrom to be re-adsorbed onto the first gas adsorbent material; whereby the second gas adsorbent material is cooled by desorption therefrom of the gas.

36. (currently amended) A method as claimed in claim 35 wherein in step (i) the first gas adsorbent material is heated by heat transfer from a relatively hotter fluid stream.

37. (previously presented) A method as claimed in claim 36 wherein the relatively hotter fluid stream is a waste process gas or liquid.

38. (currently amended) A method as claimed in claim 35 wherein, whilst the first gas adsorbent material is being heated, the second gas adsorbent material is cooled relative to the first gas adsorbent material by heat transfer with a cooling fluid stream.

39. (canceled)

40. (currently amended) A method as claimed in claim 35 wherein in step (ii) the first gas adsorbent material is cooled relative to the second gas adsorbent material by heat transfer to ambient or by heat transfer with a cooling fluid stream.

41. (previously presented) A method as claimed in claim 38 wherein the cooling fluid stream is a stream of ambient air.

42. (currently amended) A method as claimed in claim 35 wherein in step (ii), whilst the second gas adsorbent material is being cooled by desorption therefrom of the gas, the second gas adsorbent material is used to cool another fluid.

43. (currently amended) A method as claimed in claim 42 wherein ~~the other~~ said another fluid stream is a process gas or liquid requiring cooling.

44. (currently amended) A method as claimed in claim 42 wherein, once desorption from the second gas adsorbent material has reached completion, the second gas adsorbent material is allowed to be slightly heated by heat transfer from ~~the other~~ said another fluid stream, just enough to restore its temperature to a level which corresponds with its temperature in step (i) prior to gas adsorption thereon.

45. (previously presented) A method as claimed in claim 35 wherein the first gas adsorbent material has a different adsorptivity to the second gas adsorbent material.

46. (previously presented) A method as claimed in claim 35 wherein the first gas adsorbent material is a different material to the second gas adsorbent material.

47. (currently amended) A method as claimed in claim 35 wherein the first gas adsorbent material is a zeolite, the second gas adsorbent material is activated carbon, and wherein the gas adsorbed onto the first and second gas adsorbent materials is ~~the~~ carbon dioxide.

48. (canceled)

49. (previously presented) A method as claimed in claim 35 wherein the gas is pressurised relative to ambient pressure to 0.5 MPa.

50. (canceled)

51. (currently amended) A method as claimed in claim 35 wherein, prior to commencing step (i), the gas and first and second gas adsorbent materials are generally at ambient temperature.

52. (currently amended) Heat transfer apparatus comprising a chamber having a first portion which contains a first adsorbent material and a second portion which contains a second adsorbent material, wherein the portions are connected by a section that is adapted to minimize conductive heat transfer between the first and second portions such that the first and second portions are relatively thermally isolated from each other, while so as to always allow allowing continuous gaseous communication therebetween ~~and are relatively thermally isolated from each other.~~

53. (canceled)

54. (currently amended) Apparatus as claimed in claim ~~53~~ 52 wherein the section is a conduit having a relatively smaller width than the width of the first and second chamber portions adjacent thereto.

55. (previously presented) Apparatus as claimed in claim 52 wherein one or more heat transfer elements are arranged in each of the first and second chamber portions together with the first and second adsorbent materials, with each heat transfer element comprising a metal wire mesh that enhances thermal communication between an exterior of the chamber portion and the adsorbent material therein and enhances the mass transfer rate of the gas through each of the first and second adsorbent materials.

56. (canceled)

57. (previously presented) Apparatus as claimed in claim 52 wherein the first and second chamber portions are each adapted to be positioned midstream of a respective flow of fluid to transfer heat between the respective fluid and portion.

58. (previously presented) Apparatus as claimed in claim 52 wherein the first and second materials are each packed into a respective portion of the chamber, with the first adsorbent material being a zeolite and the second adsorbent material being activated carbon.

59. (canceled)

60. (currently amended) A system for continuously transferring heat from a first fluid stream and for continuously cooling a second fluid stream, the system comprising first and second apparatus each able to be brought into thermal communication with the first and second fluid streams, wherein each apparatus comprises a chamber having ~~separated first and second adsorbent materials~~ a first portion comprising a first adsorbent material and a second portion comprising a second adsorbent material, wherein the portions are connected so as to always allow continuous gaseous communication therebetween, with the portions being relatively thermally isolated from each other, and each apparatus is operable in the following stages:

- (1) the first adsorbent material is heated by thermal communication with the first fluid stream so as to desorb a gas adsorbed onto the first adsorbent material whereby the gas passes to and is adsorbed onto the second adsorbent material; and
- (2) the first adsorbent material is cooled so that the gas is desorbed from the second adsorbent material and passes therefrom to be re-adsorbed onto the first adsorbent material, with the second adsorbent material being cooled by desorption therefrom of the gas, and the second fluid stream being cooled by thermal communication with the second adsorbent material;

the system further including:

- whilst the first apparatus is operated under stage (1) to heat the first adsorbent material of the first apparatus using the first fluid stream, the second apparatus can be operated under stage (2) to cool the second fluid stream by desorption of the gas from the second adsorbent material of the second apparatus; and then

- the first fluid stream can be directed to the second apparatus and operated under stage (1) of the second apparatus, and the second fluid stream can be directed to the first apparatus and operated under stage (2) of the first apparatus;
to thereby provide for continuous transfer of heat from the first fluid stream and continuous cooling of the second fluid stream.

61. (previously presented) A system as claimed in claim 60 comprising a plurality of first apparatus and a plurality of second apparatus.

62. (previously presented) A system as claimed in claim 61 wherein the first and second apparatus are operated in parallel.

63. (previously presented) A system as claimed in claim 61 further comprising valving for selectively switching the flow of the first and second fluid streams respectively between the first and second apparatus and the second and first apparatus, to maintain a continuous transfer of heat from the first fluid stream and a continuous cooling of the second fluid stream.

64. (canceled)

65. (canceled)